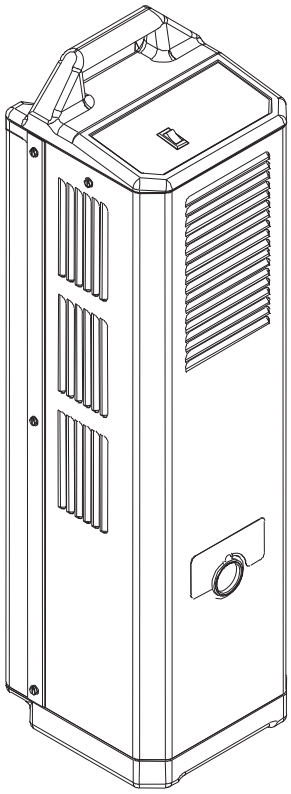
RETURN TO MAIN MENU

COOL ARC® 40 STAND ALONE WATER COOLER

IM670-A

December, 2008

For use with machines having Code Numbers: **10928, 11067**



Safety Depends on You

Lincoln arc welding and cutting equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation ... and thoughtful operation on your part. **DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT.** And, most importantly, think before you act and be careful.

CE

N80

IP 21S

OPERATOR'S MANUAL

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LINCOLN® ELECTRIC

• World's Leader in Welding and Cutting Products •

• Sales and Service through Subsidiaries and Distributors Worldwide •

Cleveland, Ohio 44117-1199 U.S.A. TEL: 216.481.8100 FAX: 216.486.1751 WEB SITE: www.lincolnelectric.com

⚠ WARNING

⚠ CALIFORNIA PROPOSITION 65 WARNINGS ⚠

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

The Above For Diesel Engines

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

The Above For Gasoline Engines

ARC WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING.

Read and understand the following safety highlights. For additional safety information, it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting - ANSI Standard Z49.1" from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2-1974. A Free copy of "Arc Welding Safety" booklet E205 is available from the Lincoln Electric Company, 22801 St. Clair Avenue, Cleveland, Ohio 44117-1199.

BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.



FOR ENGINE powered equipment.

1.a. Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.



1.b. Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.



1.c. Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.



1.d. Keep all equipment safety guards, covers and devices in position and in good repair.Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

1.e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

1.f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.

1.g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.



1.h. To avoid scalding, do not remove the radiator pressure cap when the engine is hot.



ELECTRIC AND MAGNETIC FIELDS may be dangerous

2.a. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines

2.b. EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.

2.c. Exposure to EMF fields in welding may have other health effects which are now not known.

2.d. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

2.d.1. Route the electrode and work cables together - Secure them with tape when possible.

2.d.2. Never coil the electrode lead around your body.

2.d.3. Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.

2.d.4. Connect the work cable to the workpiece as close as possible to the area being welded.

2.d.5. Do not work next to welding power source.

Mar '95



ELECTRIC SHOCK can kill.

3.a. The electrode and work (or ground) circuits are electrically “hot” when the welder is on. Do not touch these “hot” parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.

3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.

In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:

- **Semiautomatic DC Constant Voltage (Wire) Welder.**
- **DC Manual (Stick) Welder.**
- **AC Welder with Reduced Voltage Control.**

3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically “hot”.

3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.

3.e. Ground the work or metal to be welded to a good electrical (earth) ground.

3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.

3.g. Never dip the electrode in water for cooling.

3.h. Never simultaneously touch electrically “hot” parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.

3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.

3.j. Also see Items 6.c. and 8.



ARC RAYS can burn.

4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87. I standards.

4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.

4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.



FUMES AND GASES can be dangerous.

5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding with electrodes which require special ventilation such as stainless or hard facing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and below Threshold Limit Values (TLV) using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.**

5. b. The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.

5.c. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.

5.d. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.

5.e. Read and understand the manufacturer’s instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer’s safety practices. MSDS forms are available from your welding distributor or from the manufacturer.

5.f. Also see item 1.b.

AUG 06



WELDING and CUTTING SPARKS can cause fire or explosion.

6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.

6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.

6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.

6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).

6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.

6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.

6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.

6.h. Also see item 1.c.

6.I. Read and follow NFPA 51B " Standard for Fire Prevention During Welding, Cutting and Other Hot Work", available from NFPA, 1 Batterymarch Park, PO box 9101, Quincy, Ma 022690-9101.

6.j. Do not use a welding power source for pipe thawing.



CYLINDER may explode if damaged.

7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.

7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.

7.c. Cylinders should be located:
- Away from areas where they may be struck or subjected to physical damage.
- A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.

7.d. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.

7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.

7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.

7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-l, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association 1235 Jefferson Davis Highway, Arlington, VA 22202.



FOR ELECTRICALLY powered equipment.

8.a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.

8.b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.

8.c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.

Jan, 07

PRÉCAUTIONS DE SÛRETÉ

Pour votre propre protection lire et observer toutes les instructions et les précautions de sûreté specifiques qui parraissent dans ce manuel aussi bien que les précautions de sûreté générales suivantes:

Sûreté Pour Soudage A L'Arc

1. Protegez-vous contre la secousse électrique:

 a. Les circuits à l'électrode et à la piéce sont sous tension quand la machine à souder est en marche. Eviter toujours tout contact entre les parties sous tension et la peau nue ou les vétements mouillés. Porter des gants secs et sans trous pour isoler les mains.
 b. Faire trés attention de bien s'isoler de la masse quand on soude dans des endroits humides, ou sur un plancher metallique ou des grilles metalliques, principalement dans les positions assis ou couché pour lesquelles une grande partie du corps peut être en contact avec la masse.
 c. Maintenir le porte-électrode, la pince de masse, le câble de soudage et la machine à souder en bon et sûr état defonctionnement.
 d. Ne jamais plonger le porte-électrode dans l'eau pour le refroidir.
 e. Ne jamais toucher simultanément les parties sous tension des porte-électrodes connectés à deux machines à souder parce que la tension entre les deux pinces peut être le total de la tension à vide des deux machines.
 f. Si on utilise la machine à souder comme une source de courant pour soudage semi-automatique, ces precautions pour le porte-électrode s'applicuent aussi au pistolet de soudage.

2. Dans le cas de travail au dessus du niveau du sol, se protéger contre les chutes dans le cas ou on recoit un choc. Ne jamais enrouler le câble-électrode autour de n'importe quelle partie du corps.

3. Un coup d'arc peut être plus sévère qu'un coup de soliel, donc:

 a. Utiliser un bon masque avec un verre filtrant approprié ainsi qu'un verre blanc afin de se protéger les yeux du rayonnement de l'arc et des projections quand on soude ou quand on regarde l'arc.
 b. Porter des vêtements convenables afin de protéger la peau de soudeur et des aides contre le rayonnement de l'arc.
 c. Protéger l'autre personnel travaillant à proximité au soudage à l'aide d'écrans appropriés et non-inflammables.

4. Des gouttes de laitier en fusion sont émises de l'arc de soudage. Se protéger avec des vêtements de protection libres de l'huile, tels que les gants en cuir, chemise épaisse, pantalons sans revers, et chaussures montantes.

5. Toujours porter des lunettes de sécurité dans la zone de soudage. Utiliser des lunettes avec écrans lateraux dans les zones où l'on pique le laitier.

6. Eloigner les matériaux inflammables ou les recouvrir afin de prévenir tout risque d'incendie dû aux étincelles.

7. Quand on ne soude pas, poser la pince à une endroit isolé de la masse. Un court-circuit accidental peut provoquer un échauffement et un risque d'incendie.

8. S'assurer que la masse est connectée le plus prés possible de la zone de travail qu'il est pratique de le faire. Si on place la masse sur la charpente de la construction ou d'autres endroits éloignés de la zone de travail, on augmente le risque de voir passer le courant de soudage par les chaines de levage, câbles de grue, ou autres circuits. Cela peut provoquer des risques d'incendie ou d'echauffement des chaines et des câbles jusqu'à ce qu'ils se rompent.

9. Assurer une ventilation suffisante dans la zone de soudage. Ceci est particuliérement important pour le soudage de tôles galvanisées plombées, ou cadmiées ou tout autre métal qui produit des fumeés toxiques.

10. Ne pas souder en présence de vapeurs de chlore provenant d'opérations de dégraissage, nettoyage ou pistolage. La chaleur ou les rayons de l'arc peuvent réagir avec les vapeurs du solvant pour produire du phosgéne (gas fortement toxique) ou autres produits irritants.

11. Pour obtenir de plus amples renseignements sur la sûreté, voir le code "Code for safety in welding and cutting" CSA Standard W 117.2-1974.

PRÉCAUTIONS DE SÛRETÉ POUR LES MACHINES À SOUDER À TRANSFORMATEUR ET À REDRESSEUR

1. Relier à la terre le chassis du poste conformement au code de l'électricité et aux recommendations du fabricant. Le dispositif de montage ou la piece à souder doit être branché à une bonne mise à la terre.

2. Autant que possible, l'installation et l'entretien du poste seront effectués par un électricien qualifié.

3. Avant de faires des travaux à l'interieur de poste, la debrancher à l'interrupteur à la boite de fusibles.

4. Garder tous les couvercles et dispositifs de sûreté à leur place.

Mar. '93

Thank You ——— for selecting a **QUALITY** product by Lincoln Electric. We want you to take pride in operating this Lincoln Electric Company product ••• as much pride as we have in bringing this product to you!

CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for advice or information about their use of our products. We respond to our customers based on the best information in our possession at that time. Lincoln Electric is not in a position to warrant or guarantee such advice, and assumes no liability, with respect to such information or advice. We expressly disclaim any warranty of any kind, including any warranty of fitness for any customer's particular purpose, with respect to such information or advice. As a matter of practical consideration, we also cannot assume any responsibility for updating or correcting any such information or advice once it has been given, nor does the provision of information or advice create, expand or alter any warranty with respect to the sale of our products.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.

Please Examine Carton and Equipment For Damage Immediately

When this equipment is shipped, title passes to the purchaser upon receipt by the carrier. Consequently, Claims for material damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.

Please record your equipment identification information below for future reference. This information can be found on your machine nameplate.

Product _____

Model Number _____

Code Number or Date Code_____

Serial Number_____

Date Purchased_____

Where Purchased_____

Whenever you request replacement parts or information on this equipment, always supply the information you have recorded above. The code number is especially important when identifying the correct replacement parts.

On-Line Product Registration

- Register your machine with Lincoln Electric either via fax or over the Internet.
 - For faxing: Complete the form on the back of the warranty statement included in the literature packet accompanying this machine and fax the form per the instructions printed on it.
 - For On-Line Registration: Go to our **WEB SITE at www.lincolnelectric.com.** Choose "Quick Links" and then "Product Registration". Please complete the form and submit your registration.

Read this Operators Manual completely before attempting to use this equipment. Save this manual and keep it handy for quick reference. Pay particular attention to the safety instructions we have provided for your protection. The level of seriousness to be applied to each is explained below:

⚠ WARNING

This statement appears where the information **must** be followed **exactly** to avoid **serious personal injury** or **loss of life**.

⚠ CAUTION

This statement appears where the information **must** be followed to avoid **minor personal injury** or **damage to this equipment**.

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TECHNICAL SPECIFICATIONS – COOL ARC® 40

Product No. / Model		K2187-1 (COOL ARC® 40 230V International) Via Continental European (SCHUKO)- PRONG PLUG
Input		220-240VAC 50/60 Hz 1 Phase
Current Draw @ 60Hz Input		1.3-1.7 Amps
Current Draw @ 50Hz Input		2.0-2.4 Amps
Maximum Operating Pressure and Flow Rate (Open Flow, Without Welding Torch Restriction)		60 psi (414 kPa) (4.14 bar)Max. 1.66 gal/min. (6.28 liter/min) Max.
Typical Operating Pressure and Flow Rate (With Welding Torch Restriction)		53-57 psi (365-393 kPa) .45-.60 gal/min. (1.7-2.3 liter/min)
Reservoir Size		2.0 ga. (7.6 liters)
Recommended Coolant		**For Use Above Freezing:** Use Clean tap, distilled or de-ionized water. **For Use Below Freezing:** Use 50% water and 50% pure ethylene glycol (reagent or industrial grade) mixture. **DO NOT USE:** Automotive anti-freeze that contains rust inhibitors or leak stoppers. These coolants will damage the pump and block the small internal passageways of the heat exchanger, affecting cooling performance. To acquire the proper coolant contact a local welding distributor. **DO NOT USE:** Pre-packaged welding industry coolants. These coolants may contain oil-based substances, which attack the plastic components of the cooler. Once added to the cooler, these substances are virtually impossible to purge from the water lines and heat exchanger.
Weight	Shipping	46.5 lbs. (21.1 kg)
	Reservoir Full (Water)	61.2 lbs. (27.8 kg)
Dimensions	L	9.03 in. (229.4mm)
	W	9.10 in. (231.1mm)
	H (Top Face)	31.99 in. (812.6mm)
	H Top Handle)	34.26 in. (870.2mm)

EXPLANATION OF SYMBOLS THAT APPEAR ON THIS EQUIPMENT

I	**ON**
O	**OFF**

SAFETY PRECAUTIONS

⚠ WARNING



ELECTRIC SHOCK can kill.

- Disconnect input power by removing plug from receptacle before working inside Cooler.
- Use only grounded receptacle.
- Do not remove the power cord ground prong.
- Do not touch electrically "hot" parts inside Cooler.
- Have qualified personnel do the installation, maintenance and troubleshooting work.

UNPACKING THE COOL ARC® 40

The packaging of the Cooler is designed to withstand shipping abuse, and contains a cardboard liner that surrounds the unit. If any shipping damage has occurred, contact your certified Lincoln distributor or service center. When unpacking the unit, avoid thrusting sharp objects through the carton liner, which may puncture the plastic reservoir. Below is the recommended procedure for unpacking the Cooler:

- Open top flap where identification label appears.
- Remove loose items and top insert.
- Open bottom flap.
- Remove bottom insert and slide Cooler, wrapped in inside liner from outer carton.
- Gently remove liner and packaging foam from Cooler.

Save the instruction manual and service directory supplied with the COOL ARC® 40 for parts orders and future maintenance service.

FILLING THE COOLANT RESERVOIR

Recommended Coolant

- For Use Above Freezing: Clean tap, distilled or de-ionized water.
- For Use Below Freezing: 50% water and 50% pure ethylene glycol (reagent or industrial grade) mixture.

- **DO NOT USE:** Automotive anti-freeze that contains rust inhibitors or leak stoppers. These coolants will damage the pump and block the small internal passageways of the heat exchanger, affecting cooling performance.

- **DO NOT USE:** Pre-packaged welding industry coolants. These coolants may contain oil-based substances, which attack the plastic components of the cooler. Once added to the cooler, these substances are virtually impossible to purge from the water lines and heat exchanger.

To avoid freeze damage and water leakage in shipment, the COOL ARC® 40 unit is delivered empty with no coolant in the system. To fill the unit, locate the plastic Snap-On reservoir fill cap at the front middle of the unit. Remove the fill cap by pressing the center of the cap inward while pulling at the tab on the outer edge.

Clean tap water, distilled water, de-ionized water, a 50/50 mix of pure ethylene glycol and water, or any other coolant specified by the manufacturer of the water cooled product that the Cooler is used with, can be added into the coolant reservoir. The opening of the fill cap mates with most coolant containers but, to avoid spillage of coolant, a funnel should be placed into the reservoir hole when filling the COOL ARC® 40.

NOTE: Pure solutions and mixtures of, or materials (i.e. towels) wetted with ethylene glycol are toxic to humans and animals. They must not be haphazardly discarded, especially by pouring liquids down the drain. Contact the local EPA office for responsible disposal methods or for recycling information.

For best results when using the COOL ARC® 40 with Lincoln guns or torches, use distilled or de-ionized water, although if not available, tap water can be used. If protection from freezing is desired, use a 50% water and 50% pure ethylene glycol (reagent or industrial grade) mixture. An alcohol and water mixture is also acceptable.

When using the COOL ARC® 40 with other products, consult the manufacturer's instruction manual for recommended coolants.

⚠ CAUTION

DO NOT USE OIL BASED COOLANTS OR COOLANTS THAT CONTAIN RUST INHIBITORS OR LEAK STOPPERS.

The unit can be filled either vertically or horizontally.
UNPLUG THE COOLER BEFORE FILLING THE COOLANT RESERVOIR:

UPRIGHT (VERTICAL):

- Tilt the unit backward and pour 2 gallons (7.6 liters) of coolant into the coolant reservoir fill hole through a funnel.
- If a 1 gallon (3.8 liters) fill bottle is available, tilt the unit forward until the bottle mates with the coolant reservoir fill hole. Then tilt the unit backward until the fill bottle is emptied. Fill the unit with 2 gallons (7.6 liters) of coolant.

LYING DOWN (HORIZONTAL):

Carefully add 2 gallons (7.6 liters) of coolant through a funnel into the coolant reservoir fill hole.
AVOID SPILLING COOLANT INTO THE LOUVERS ON THE TOP OF THE COOLER.

The cooler is "FULL" when the coolant lies just below the coolant reservoir opening with the cooler in the upright (vertical) position.

NOTE: DO NOT ADD MORE THAN 2 GALLONS (7.6 LITERS) OF COOLANT INTO THE RESERVOIR. The fill cap contains a pressure release air hole, which must not be blocked by overfilling the reservoir with coolant.

Be certain to replace the reservoir fill cap when the reservoir is full. Simply press on the inside center of the fill cap until the cap snaps into place. Operation of the COOL ARC® 40 without the fill cap in place can cause poor cooling efficiency, evaporation loss of coolant and reduced product life.

COOLANT "IN" AND "OUT" CONNECTIONS

The fittings located on the back center of the COOL ARC® 40 are two female **5/8-18 left-hand threaded fittings.** (CGA Style) These mate with water hoses typically used in the welding industry.
Refer to Figure 1.

Water or Coolant Line Connections to the COOL ARC® 40
Take the connector nut of the water hose and check if the thread of the male connector nut matches the 5/8-18 left hand female thread in the fitting on the back of the unit.

For all Lincoln products and those with a connector nut on the water hose that mate with the fittings on the back of the COOL ARC® 40:

(Reference FIG. 1) Take the accessory "INLET" hose (colored or tagged blue on most hoses) and thread it into the coolant "OUT" fitting located on the right side of the back of the cooler. Secure the connector nut of the hose tightly into the fitting with a wrench so that leaking does not occur. Then take the accessory "OUTLET" hose (colored or tagged red on most hoses) and thread it into the coolant "IN" fitting located on the left side of the back of the cooler. Again, tightly secure the connector nut of the hose into the fitting of the cooler with a wrench to insure that no leaking occurs.

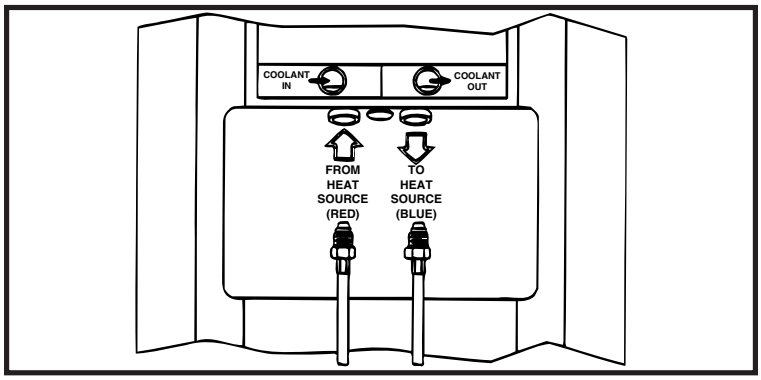
NOTE: BE CERTAIN THAT NO LEAKS EXIST WHEN THE COOLER IS TURNED ON. A LEAK WILL DEPLETE RESERVOIR VOLUME, CAUSING POOR COOLING PERFORMANCE AND REDUCING GUN OR TORCH LIFE.

If the connector nut on a water hose does not mate with the fittings on the back of the COOL ARC® 40, order the following:

(See Parts Lists for Item's below)

(2) Connector Nuts
(2) Nipples for 3/16" I.D. hose
(2) Hose Clamps

FIGURE 1
Inlet and Outlet Hose Connection Diagram



Remove the connector nut from the INLET hose by making a straight cut 6-12mm(1/4"-1/2") away from the end of the nipple located inside of the hose. Take the nipple and the connector nut ordered above and insert the nipple into the connector nut so that the threaded end of the connector nut points away from the barbed end of the nipple. Twist the barbed end of the nipple into the hose until the shoulder of the nipple is flush with the end of the hose. Secure the hose onto the nipple with the hose clamp to insure that the connection is watertight. No water can leak from the connection if it is properly attached. Repeat the procedure for the OUTLET hose. When complete, follow the connection procedure detailed above for connecting the hoses to the COOL ARC® 40 fittings.

The connector and nipple listed fit tightly onto 4.0 mm (5/32") to 4.8mm(3/16") inner diameter hose, but if clamped tightly to the hose, can fit up to a 6.4mm(.25") inner diameter hose.

INPUT POWER CONNECTION

Plug the input power cord on the COOL ARC® 40 into a standard 230V circuit breaker protected receptacle.

INSTALLATION ON UNDERCARRIAGE OR POWER SOURCE

The COOL ARC® 40 can be mounted either horizontally or vertically on a power source. To mount the cooler horizontally, order the K559-2 Cooler Horizontal Mounting Bracket. To mount the cooler vertically on a power source with a dual cylinder undercarriage, order K559-3 Cooler Vertical Mounting Bracket.

HORIZONTAL INSTALLATION ON THE TOP OF A POWER SOURCE

For proper installation, follow the instructions provided with the K559-2 Cooler Horizontal Mounting Bracket Kit. The cooler is secured to the power source lift bale. Reference the table below for a list of power sources that allows the COOL ARC® 40 to be mounted horizontally on top.

VERTICAL INSTALLATION ON POWER SOURCE WITH A DUAL CYLINDER UNDERCARRIAGE.

For proper installation, follow the instructions provided with the K559-3 Cooler Vertical Mounting Bracket Kit. The cooler is securely mounted to the dual cylinder support bracket. Reference the table below for a list of power sources and dual cylinder undercarriages that allows the COOL ARC® 40 to be mounted vertically at the rear of the machine on the gas bottle rack.

⚠ WARNING

If the COOL ARC® 40 is not securely mounted horizontally on top of a power source or vertically on a dual cylinder undercarriage.
THE COOL-ARC 40 MUST BE OPERATED IN THE HORIZONTAL POSITION. This will prevent the cooler from being accidentally tipped over.

Power Source	K559-3 Cooler Vertical Mounting Bracket on a Dual Cylinder Undercarriage	K559-2 Cooler Horizontal Mounting Bracket Can be used On Top of a Power Source
CV-300	K874 Undercarriage	Yes
CV-400	Not Available	Yes
CV-655	Not Available	Yes
DC-250	Not Available	Yes
DC-400	Not Available	Yes
DC-600, DC-655	Not Available	Yes
Square Wave TIG 275	K932-1 Undercarriage	No
Square Wave TIG 355	Not Available	Yes
Power Wave 455	K1570-1 Undercarriage	No
Power MIG 255	Not Available	No

INSTALLATION OF WATER COOLED ACCESSORIES

After following the installation instructions above, the COOL ARC® 40 is ready for connection to a water-cooled accessory.

WATER COOLED TIG TORCH AND MIG GUN

Follow Figure 2 when using the COOL ARC® 40 with water-cooled TIG torches. Follow Figure 4 when using the COOL ARC® 40 with water-cooled MIG gun. Consult the manufacturer's instruction manual when using the COOL ARC® 40 with other water-cooled TIG and MIG accessories.

CONNECTION TO WIRE FEEDERS

Follow Figure 3 when using the COOL ARC® 40 in conjunction with a wire feeder. The feeder will need to have pass-through water hoses installed in order to correctly function with the COOL ARC® 40, since the cooler requires continuous flow. DO NOT USE A WATER SOLENOID VALVE with the COOL ARC® 40. Water pass-through connection kits are available for wire feeders. Refer to product literature or the wire feeder's instructions manual for kit availability and further connection details. It is not required to run the water lines through the wire feeder, but is does provide a very neat MIG gun connection.If pass-through water hoses are unavailable, connect the MIG gun as **shown in Figure 4.**

FIGURE 2

Water Cooled TIG Torch Connection

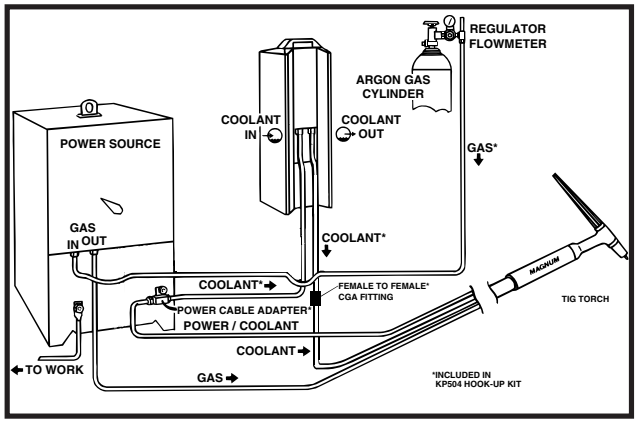
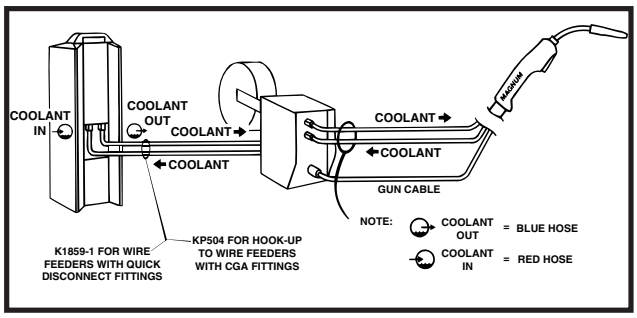


FIGURE 3

Water Cooled MIG Gun Connection



⚠ CAUTION

DO NOT USE A WATER SOLENOID VALVE with the COOL ARC® 40. When a solenoid valve closes, the pump would dead-head, causing the pump to heat up excessively leading to premature failure of the pump.

K529-10 POWER INPUT CABLE WITH WATER AND GAS HOSES

This cable assembly includes a (1) power cable, (1) control cable, (1) gas hose and (2) water hoses to connect a power source to a wire feeder. The cable length is 3.05m (10Ft.). The water hoses have 5/8"-18 left hand male hose fittings and the gas hose has a 5/8"-18 right hand male hose fitting. The cable and hose lengths are designed to connect a wire feeder to a COOL ARC® 40 that is vertically mounted at the rear of a power source on a dual cylinder undercarriage.

Refer to Figure 5 for an illustration of this connection.

FIGURE 4

Connection to Wire Feeder (Do Not Use Water Solenoid)

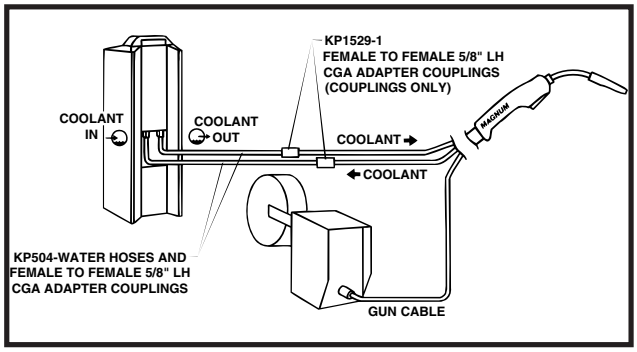
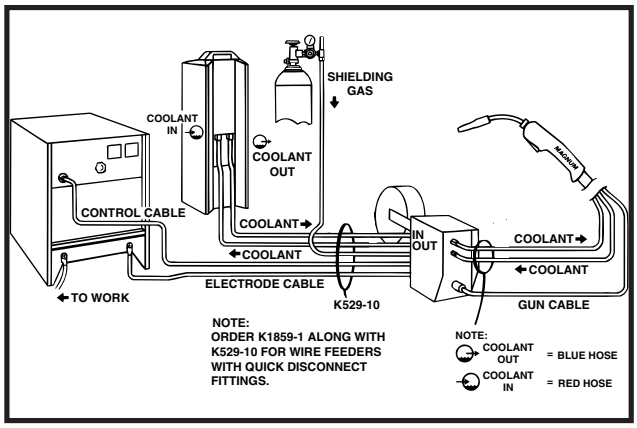


FIGURE 5

Connection to Wire Feeder (Do Not Use Water Solenoid)



PRODUCT DESCRIPTION

The COOL ARC® 40 is a stand alone re-circulation cooling system designed for use with water-cooled TIG, MIG, PAC (Plasma Arc Cutting) and PAW (Plasma Arc Welding) guns and torches. The coolant "IN" and "OUT" connections are 5/8-18 left-hand female threads which match the standard connector nut of domestic water hoses (CGA style) and water-cooled TIG torches. The COOL ARC® 40 is a continuous duty cooler.

The overall size and shape of the cooler is identical to the Magnum 20. The COOL ARC® 40 can operate in either the vertical or horizontal position. The COOL ARC® 40 is very easy to use and understand with only one power switch on the control panel. The cooler has an International 230V power input receptacle, making it very easy to power up. Adding coolant to the reservoir is simple and connecting to the coolant "IN" and "OUT" connections are easily made with an adjustable wrench.

The COOL ARC® 40 coolant flow is circulated through a heat exchanger to remove heat energy from the coolant. The coolant flow is then deposited into the coolant reservoir. The pump draws its coolant supply from the coolant reservoir and delivers coolant to the welding torch or gun. **Refer to Figure 6**.

RECOMMENDED PROCESSES AND EQUIPMENT

The COOL ARC® 40 is designed for use with water-cooled TIG, MIG, PAC (Plasma Arc Cutting) and PAW (Plasma Arc Welding) guns and torches. The COOL ARC® 40 can be used with MIG wire feeders and power sources as well as TIG power sources.

The following should always be observed when operating the COOL ARC® 40:

- High voltage typical of welding operations can kill.
- Immersion in water around electrical lines can cause electrical shock.
- Moving parts can injure. Never place fingers into openings of Cooler.
- Never operate the cooler with any case parts off or removed.
- Unplug the cooler before removing the wraparound or servicing the unit.
- Unplug the cooler before filling the reservoir.
- Hot coolant can burn skin. Always be sure coolant is NOT HOT before servicing the cooler.
- Do not pour used ethylene glycol coolant down the drain.
- Do not remove the pump relief valve's 3/4" hex nut or attempt to adjust the relief valve setting.
- Check the coolant reservoir level daily.
- Keep the reservoir full especially after changing any water lines.
- The cooler should be turned "OFF" when welding is not taking place for long periods of time.
- Be certain that the cooler is "ON" (power switch in the " I " position) before beginning to weld.
- Never operate the cooler with the reservoir fill cap removed. Unless checking coolant flow.
- Avoid placing the cooler near areas of extreme heat.
- Avoid placing the cooler near a flux hopper or an area where dust build-up is extreme.
- Avoid kinking or putting sharp bends in any water lines.
- Keep all water lines clean and free of any blockage.
- **Do not operate cooler without coolant in reservoir. Never run pump dry.**

TURNING THE SYSTEM "ON"

After connecting the COOL ARC® 40 per the installation instructions above, plug the unit into a International 230V electrical receptacle for start-up operation. Be certain that the power input into the unit matches the Cooler's rated input.

The POWER SWITCH is located on the right side of the control panel. The cooler will be "ON" when pressed to " I " and "OFF" when pressed to " O ".

You will be able to hear the fan running and feel airflow out of the back of the unit when the cooler is operating. The cooler will run continuously unless it is plugged into a switched receptacle on the power source.

The coolant FLOW INDICATOR is accessed by removal of the fill cap. Actual return flow is directly visible, via the fill opening with the unit in the vertical or horizontal position.

When first starting the unit, check all of the coolant hoses to insure that no water leaks are present. Water leakage causes poor welding performance, poor cooling performance, low welding component life and potential electrical safety hazards.

COOLING EFFICIENCY

The high cooling efficiency of the COOL ARC® 40 offers a cooler, more comfortable weld than conventional air-cooled procedures as well as leading competitors water cooled systems.

The COOL ARC® 40 effectively removes the heat of the arc away from the gun or torch handle and places it into the exiting air flow at the back of the Cooler. Ambient air temperature affects the coolant temperature of the COOL ARC® 40.

For example:
Unlike other water coolers that depend on bulky reservoir size, the high efficiency components of the COOL ARC® 40 allows the reservoir size to be small. The result is a lightweight, portable unit.

FIGURE 6
Coolant Circulation Diagram

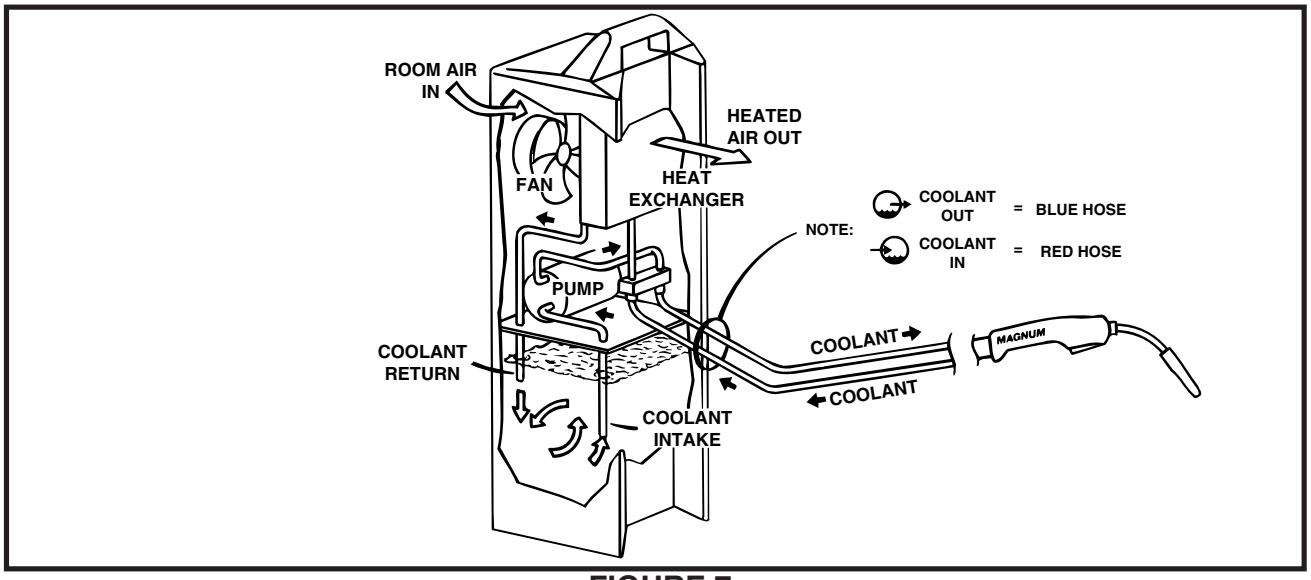
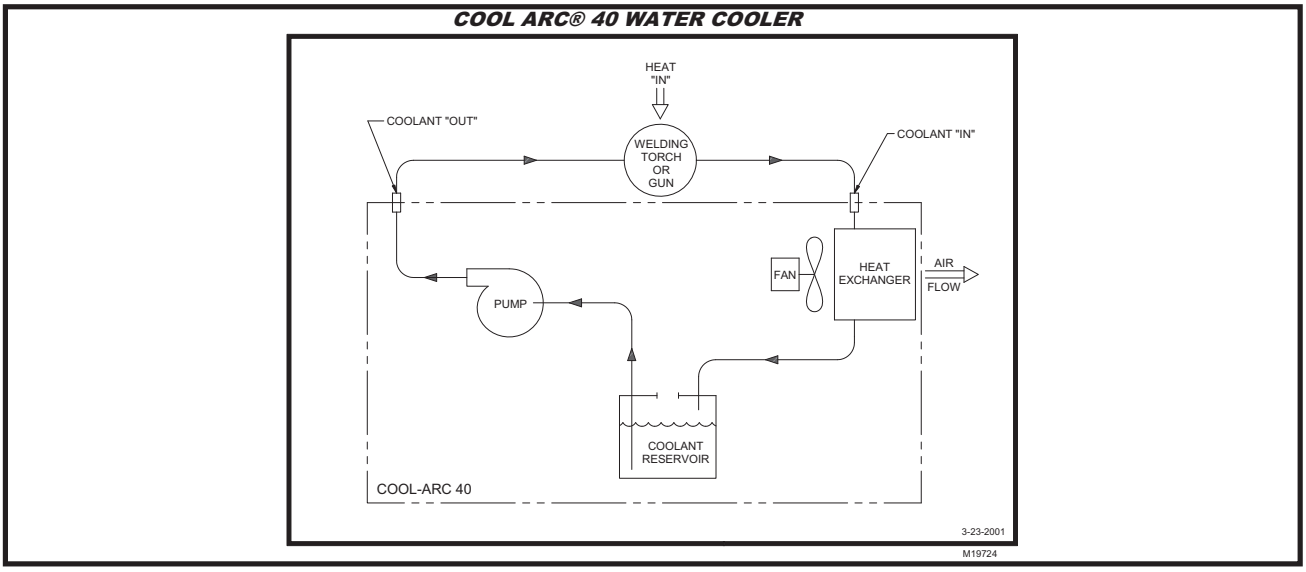


FIGURE 7



OPTIONAL EQUIPMENT (Field Installed)

K559-2 Cooler Horizontal Mounting Bracket:

Mounts the COOL ARC® 40 horizontally to the top of a power source, securing the cooler to the lift bale. The kit includes all necessary mounting hardware.

K559-3 Cooler Vertical Mounting Bracket:

Mounts the COOL ARC® 40 vertically to a power source that has a dual cylinder undercarriage already installed. The bracket securely mounts the cooler to the dual cylinder support bracket. The kit includes all necessary mounting hardware.

K1536-1 Magnum Flow Sensor:

Protects valuable torches, guns and robotic welding systems from damage when loss of coolant flow has occurred for any reason such as a blocked or kinked water line or a ruptured hose.

KP1529-1 Quick Connect Water Adapter:

Converts a male 5/8"-18 left hand hose fitting (CGA Style) to a female quick connect fitting. The female quick connect mates with the male quick connects on water cooled MIG guns or hoses.

K1859-1 Water Cooler Hoses (5/8" LH CGA to QD):

This kit includes two 25' – 3/16 I.D. water hoses with a 5/8" LH CGA style fitting on one end and a male quick disconnect on the other. Most wire feeders have female quick disconnects and this kit allows direct hook up between the water cooler and the wire feeder.

K1859-2 Water Cooler Hoses (5/8" LH CGA to 5/8 LH CGA)

This kit includes two 7.6m(25 Ft.)-4.7mm(3/16") inside diameter hoses with a 5/8"LH CGA style fitting on both ends. Hoses can be mated with KP1529-1 for a water Cooler to MIG gun application. Ideal for water Cooler to Machines or wire feeders with 5/8"LH CGA style fittings.

Field Installed CGA style hose fittings:
Fittings to convert a standard 4.7mm(3/16") I.D. hose to a 5/8"-18 left hand male hose fitting. These male fittings mate with the fittings on the back of the Cool-Arc 40.

Order the following:
(2) Connector Nuts (T15007-2)
(2) Nipples for 3/16" I.D. Hose (T15008)
(2) Hose Clamps (S10888-35)

"The connector and nipple listed fit tightly onto 5/32" (4.0mm) to 3/16" (4.8mm) inner diameter hose, but if clamped tightly to the hose, can fit up to a .25 (6.4mm) inner diameter hose. These fittings are also readily available from any industrial welding supplier.

K529-10 Power Input Cable with Water and Gas Hoses:

This cable assembly includes the following: (1) power cable, (1) control cable, (1) gas hose and (2) water hoses. The cable assembly connects a power source to a wire feeder for water-cooled MIG applications. The cable length is 10'. The water hoses have 5/8"-18 left hand male hose fittings and the gas hose has a 5/8"-18 right hand male hose fitting. The cable and hose lengths are designed to connect a wire feeder to a COOL ARC® 40 that is vertically mounted at the rear of a power source on a dual cylinder undercarriage.
Refer to Figure 5 for an illustration of this connection.

KP504 TIG Hook Up Kit:

The Hook-Up Kit includes: (2) water hoses, (1) gas hose, (2) water adapter fittings, male to male 5/8" LH thread, (1) water hose coupler, female to female 5/8" LH thread and (1) power cable adapter. Threads on all hoses and fittings are CGA style.

⚠ CAUTION

DO NOT USE A WATER SOLENOID VALVE with the COOL ARC® 40. When a solenoid valve closes, the pump would dead-head, causing the pump to heat up excessively leading to premature failure of the pump.

Coolant Hoses:

Coolant hoses are readily available from an industrial welding supplier or in various MIG or TIG hook-up kits provided by Lincoln Electric. Refer to Magnum accessory literature sheets.

For lengths of coolant hoses over 7.6m(25 Ft.) and up to 15.2m(50 Ft)., 7.9mm(5/16") I.D. hose is recommended. 7.9mm(5/16") I.D. hose and accommodating fittings are available from an industrial welding supplier.

SAFETY PRECAUTIONS

⚠ WARNING



ELECTRIC SHOCK can kill.

- **Disconnect input power by removing plug from receptacle before working inside Cooler.**
- **Do not operate with covers removed.**
- **Use only grounded receptacle.**
- **Do not remove the power cord ground prong.**
- **Do not touch electrically "hot" parts inside Cooler.**
- **Have qualified personnel do the installation, maintenance and troubleshooting work.**

See additional warning information at the front of this operator's manual.

ROUTINE MAINTENANCE

Remove accumulated dust and dirt from the internal components of the cooler by blowing it out with a low-pressure air hose or removing it with a vacuum hose.

PERIODIC MAINTENANCE

In dirty or dusty environments or if biological growth occurs in the coolant, it may be necessary to flush the coolant reservoir. Drain the old coolant, rinse the inside of the reservoir and circulate rinsing solution through the coolant system. Add new coolant when cleaning is finished. **It is recommended to flush the coolant at least once a year.** A cooling system free from debris offers increased cooling efficiency and longer pump and torch life. See the Coolant Treatment Recommendation in this "Section D-2".

NOTE: Pure solutions and mixtures of, or materials (i.e. towels wetted) with ethylene glycol are toxic to humans and animals. They must not be haphazardly discarded, especially by pouring liquids down the drain. Contact the local EPA office for responsible disposal methods or for recycling information

PUMP MAINTENANCE

The pump head has a "built in" strainer on the inlet side of the pump. **It is recommended to clean or replace the pumps inlet strainer at least once a year. (See Above):**

- Drain the coolant reservoir and all coolant lines. Dispose of the coolant properly as specified in **NOTE** above.
- Hold the pump head firmly to apply a counter-torque when loosing the strainer's 7/8" acorn nut located on the bottom. Do not confuse with 3/4" acorn nut. Remove nut and slide inlet strainer down and out from the pump head.
- Gently rinse the strainer under running water to thoroughly clean it.
- Use a mirror to inspect the inside of the pump for contamination. Carefully remove hardened debris with a dental pick if necessary, without scratching the inside of the pump.
- Reinstall the strainer and 7/8 acorn nut, tightening with 75+/-15 in-lbs. of torque. Wipe dry all area wetted with coolant. Dispose of coolant soaked towels properly as specified above.
- For a more in depth procedure, See Section D-2, "Pump Inlet Strainer".

PUMP MOTOR

The COOL ARC® 40 is rated for continuous operation. It is recommended to re-oil the pump motor bearings once a year as follows:

- Remove the plastic plugs located on the top of both the inboard and outboard bearing end-caps.
- Re-oil each bearing with 30-35 drops of SAE 20 oil then reinstall both plugs.

HEAT EXCHANGER

To maintain maximum cooler efficiency, the heat exchanger should be kept free of dust and dirt build-up. Clean the heat exchanger periodically using a vacuum hose or a low-pressure air line. Avoid placing the unit near a flux hopper or a flux waste container. A clean heat exchanger offers better cooling performance and longer product life. In extremely dirty environments, it may be necessary to remove the heat exchanger completely from the cooler and clean the fins with soap and water. Use care to avoid damaging the fins.

RESERVOIR COOLANT LEVEL

The reservoir volume should be checked daily before using the cooler. Remove the reservoir fill cap and check the coolant level. The reservoir is full when the coolant level is just below the reservoir fill opening with the unit in the upright position. Keep the reservoir full, especially after disconnecting the water lines or changing the accessory being cooled.

COOLANT TREATMENT RECOMMENDATION

This procedure is intended to provide a means of reducing the objectionable amount of fungal and bacterial contamination that has occurred in COOL ARC® 40 water coolers and cooling systems.

Additive:
The recommended additive can be purchased at local pool supply stores. An example is "Maintain Pool Pro 30% Non-Foam Algaecide".

Limitations:
- This additive should be used with fresh coolants containing only pure water.
- This additive should not be used with coolants containing any other substance, including antifreeze substances.
- No other additives shall be used with the specified coolant that has been treated with the recommended additive.
- This procedure is no permanent substitute for a periodic maintenance schedule for the specified coolers
- A 1 quart bottle of additive is sufficient to disinfect and treat about 720 coolers.
- **Check with the manufacturer of your guns or torches to be sure that this procedure is compatible with your equipment.**

Prepare the disinfectant:

Make a quantity of only what is needed to avoid an excess Bulk preparation (for coolers serviced in quantity):
8.775 liters(2.325 gals.) of pure, fresh water per cooler 1.625 ml of additive per cooler. Example: for 100 coolers, add 162.5 ml to 232.5 gals. of pure fresh water Pour 7.55 liters(2.0 gals.) of disinfectant into the empty reservoir. Recap the reservoir, tape over the air vent in the cap, roll disinfectant around the inside the reservoir to thoroughly coat all of its surfaces. Remove the tape from the reservoir cap. Prime the cooling system by positioning cooler horizontally and circulate disinfectant through it for 10 to 15 minutes. Drain disinfectant from the cooling system. Do not reuse this solution. Add new, fresh coolant to the cooling system. Add 1.225 liters(0.325 gals.) of fresh disinfectant to the system by pouring it into the reservoir, then reduce the concentration to the nominal 30 ppm:

Add the balance 6.325 liters(1.675 gals.) of fresh, pure water to the reservoir to create the treated coolant concentration. Prime the cooling system.
Check coolant level. Add more fresh, pure water if required, without adding more than 0.475 liters(0.125 gal.) of pure water to prevent diluting the coolant additive.

PUMP INLET STRAINER

Poor cooler performance can usually be traced to a partially or completely blocked pump inlet strainer. This is a user-serviceable item and can be cleaned and reused, or replaced. Continued pump operation with a blocked strainer can cause:
- Voiding of cooler service warranty
- Cavitation damage to the pump head's inlet areas
- Welding accessory damage from overheating due to insufficient coolant flow rate.

A new or properly cleaned pump inlet strainer should restore the cooler's performance.

For additional service and periodic maintenance details and for recommended coolants, follow the recommendations listed below.

Procedure and Preparation:

⚠ WARNING

- **Always switch off the COOL ARC® 40 machine power**
- **Always disconnect the COOL ARC® 40 machine from service input power.**
- **Always allow the coolant in the system to cool enough to avoid burn injuries.**
- **Avoid contact with contaminated coolant. Wear waterproof gloves and protective eye wear.**
- **Do not remove the pump relief valve's 3/4 in. acorn hex nut or attempt to adjust the relief valve setting.**

INSPECT CONDITION OF COOLANT

If coolant is contaminated or old:
- Drain the system of coolant and dispose of it in an environmentally responsible manner.
- Flush system of old coolant.
- Fill with fresh tap or distilled water, run for ten minutes, and drain.
- Proceed to adding coolant..

If coolant is clean and fresh:
- If clean, dedicated coolant handling equipment, including a clean siphon pump and a clean holding tank are available then proceed to servicing the Pump Inlet Strainer.

Removing Coolant:

a. Drain coolant from the reservoir using clean siphoning equipment
b. Coolant level should be drained below the strainer-pressure fitting:
 • This prevents coolant from streaming out of unit when strainer nut is removed

SERVICE THE PUMPS INLET STRAINER:

a. Place absorbent towels underneath pump head to prevent stray coolant from wetting cooler's electrical components.
b. See figure 7. Hold pump head to apply counter torque when loosening strainer's 7/8 acorn nut. Do not confuse with 3/4 acorn nut. Remove nut and slide inlet strainer down and out from pump head.
c. Inspect strainer for damage or excessive clogging:
 • Replace or Gently rinse strainer under running water to thoroughly clean it.
d. Use a mirror to inspect inside of pump for contamination. If hardened debris is present and interferes with filter seating, carefully remove it with dental pick without scratching inside of the pump. Use care not to drop debris into pump.
e. Reinstall strainer and acorn nut, tightening with 34±15mm-Kilograms(75±15 in.-lbs.) of torque.
 • Hold pump head to apply counter-torque when loosening strainers 7/8 acorn nut.
f. Wipe dry all areas wetted by coolant. Dispose of towels in an environmentally responsible manner.

Add coolant:

a. Add 7.6 ltr. (2 gal.) of coolant, either the recommendations off the water cooled accessory or if none, see the design specification summary listed in this manual.

ADDITIONAL SERVICE NOTES:

1. Always use a back-up wrench on pump head when loosening or tightening pump fittings.

2. Never run the pump dry. Always use a recommended coolant, otherwise pump damage may result.

3. Flush coolant from system and replace with fresh, recommended coolant at least once a year. More frequent flushing may be necessary, depending upon the user's particular system or its usage, especially if it is prone to clogging from biological growth in the coolant.

FIGURE 7



HOW TO USE TROUBLESHOOTING GUIDE

⚠ WARNING

Service and Repair should only be performed by Lincoln Electric Factory Trained Personnel. Unauthorized repairs performed on this equipment may result in danger to the technician and machine operator and will invalidate your factory warranty. For your safety and to avoid Electrical Shock, please observe all safety notes and precautions detailed throughout this manual.

This Troubleshooting Guide is provided to help you locate and repair possible machine malfunctions. Simply follow the three-step procedure listed below.

Step 1. LOCATE PROBLEM (SYMPTOM).
Look under the column labeled "PROBLEM (SYMPTOMS)". This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting.

Step 2. POSSIBLE CAUSE.
The second column labeled "POSSIBLE CAUSE" lists the obvious external possibilities that may contribute to the machine symptom.

Step 3. RECOMMENDED COURSE OF ACTION
This column provides a course of action for the Possible Cause, generally it states to contact your local Lincoln Authorized Field Service Facility.

If you do not understand or are unable to perform the Recommended Course of Action safely, contact your local Lincoln Authorized Field Service Facility.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.

TROUBLESHOOTING

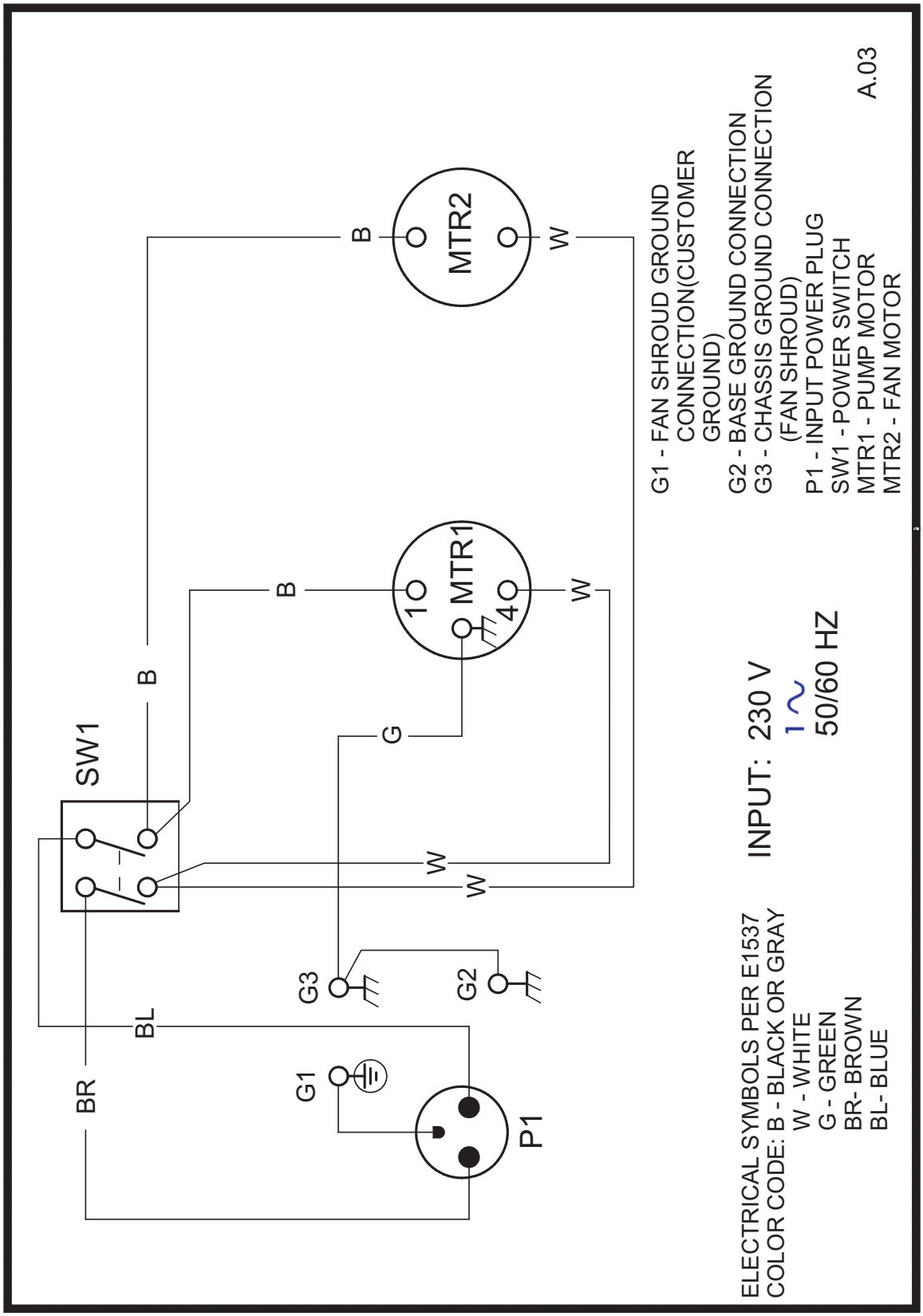
E-2

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE AREAS OF MISADJUSTMENTS(S)	RECOMMENDED COURSE OF ACTION
Cooler does not operate with power switch "ON".	1. Input cord unplugged. 2. Power switch faulty 3. Power harness damaged. 4. Water lines blocked or crimped. 5. Leak in gun or water hoses. 6. Coolant reservoir empty. 7. The system needs to be primed	If all recommended possible areas of misadjustment have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
(Switch pushed to "I" position.) Internal water leak.	1. Hose clamp loose on one of internal hoses. 2. Internal hose punctured. 3. Heat exchanger leaking. 4. Pump seal is leaking	
Torch or gun runs hot.	1. Unit placed by area of extreme heat. 2. Low coolant flow. 3. No coolant flow. 4. Fan not operating. 5. Heat exchanger clogged.	
Fan operates but there is low coolant flow.	1. Leak in torch/gun or hoses. 2.Torch/gun or hoses partially obstructed. 3. Reservoir empty or very low. 4. Pump strainer is dirty.	
Fan operates but there is no coolant flow.	1. Pump or pump motor failure. 2. Pump strainer is blocked.	
Pump operates, but fan does not. Cooler trips outlet circuit breaker.	1. Loose or disconnected fan lead. 2. Obstruction in fan blade. 3. Fan motor failure.	
Cooler trips outlet circuit breaker.	1. Circuit overloaded. 2. Fan or pump motor failure.	

⚠ CAUTION

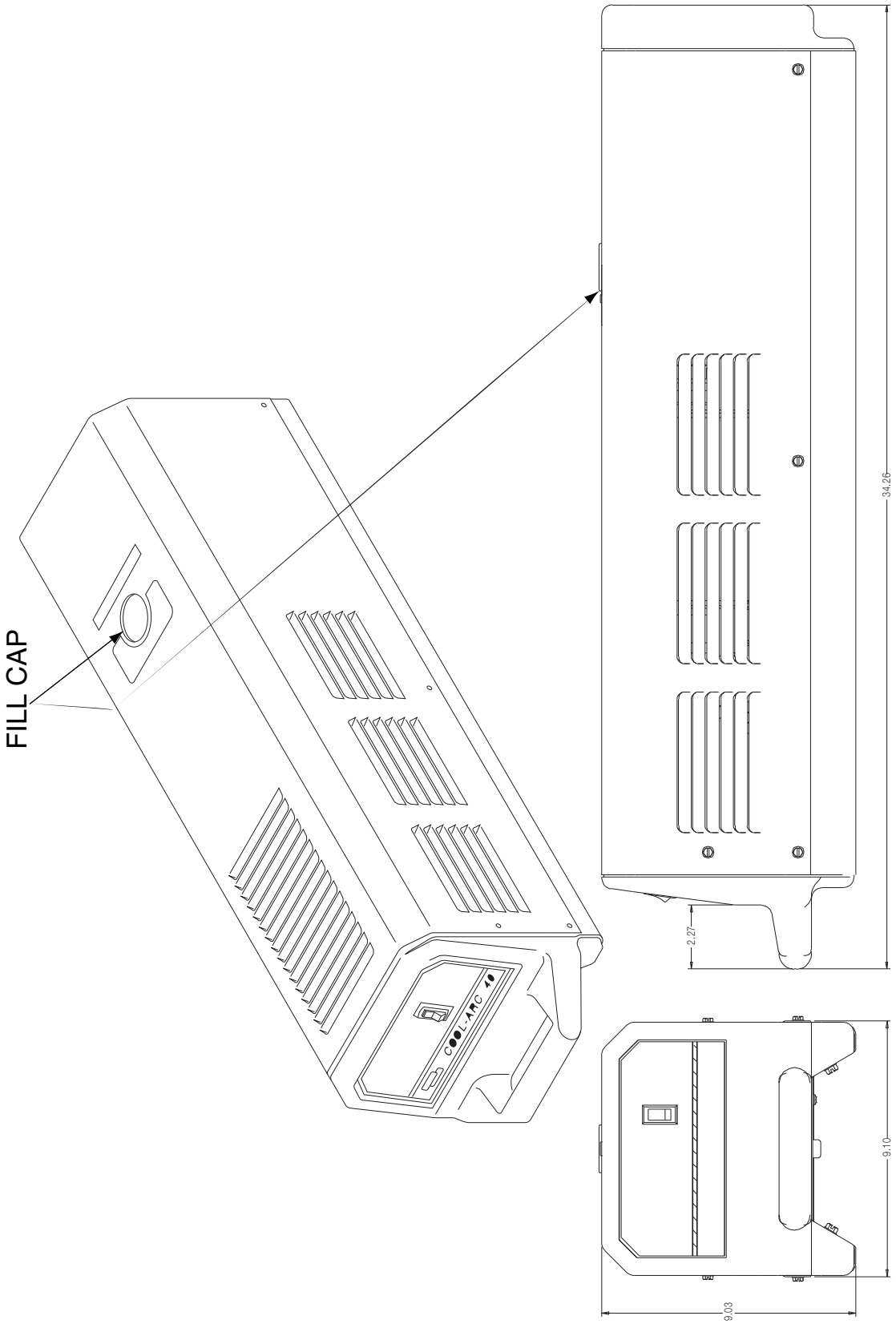
If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your **Local Lincoln Authorized Field Service Facility** for technical troubleshooting assistance before you proceed.



M20078

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number..

DIMENSION PRINT

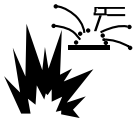


A

L11540

NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number..

NOTES

			
WARNING	● Do not touch electrically live parts or electrode with skin or wet clothing. ● Insulate yourself from work and ground.	● Keep flammable materials away.	● Wear eye, ear and body protection.
Spanish **AVISO DE PRECAUCION**	● No toque las partes o los electrodos bajo carga con la piel o ropa mojada. ● Aislese del trabajo y de la tierra.	● Mantenga el material combustible fuera del área de trabajo.	● Protéjase los ojos, los oídos y el cuerpo.
French **ATTENTION**	● Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension. ● Isolez-vous du travail et de la terre.	● Gardez à l'écart de tout matériel inflammable.	● Protégez vos yeux, vos oreilles et votre corps.
German **WARNUNG**	● Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! ● Isolieren Sie sich von den Elektroden und dem Erdboden!	● Entfernen Sie brennbarres Material!	● Tragen Sie Augen-, Ohren- und Körperschutz!
Portuguese **ATENÇÃO**	● Não toque partes elétricas e electrodos com a pele ou roupa molhada. ● Isole-se da peça e terra.	● Mantenha inflamáveis bem guardados.	● Use proteção para a vista, ouvido e corpo.
Japanese **注意事項**	● 通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。 ● 施工物やアースから身体が絶縁されている様にして下さい。	● ヒュームから頭を離すようにして下さい。 ● 換気や排煙に十分留意して下さい。	
Chinese **警 告**	● 皮肤或濕衣物切勿接觸帶電部件及銲條。 ● 使你自己與地面和工件絕緣。	● 頭部遠離煙霧。 ● 在呼吸區使用通風或排風器除煙。	
Korean **위 험**	● 전도체나 용접봉을 젖은 헝겁 또는 피부로 절대 접촉치 마십시요. ● 모재와 접지를 접촉치 마십시요.	● 얼굴로부터 용접가스를 멀리하십시요. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시요.	
Arabic **تحذير**	● لا تلمس الاجزاء التي يسري فيها التيار الكهربائي أو الالكترود بجلد الجسم أو بالملابس المبللة بالماء. ● ضع عازلا على جسمك خلال العمل.	● ابعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها.	

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

			
● Keep your head out of fumes. ● Use ventilation or exhaust to remove fumes from breathing zone.	● Turn power off before servicing.	● Do not operate with panel open or guards off.	**WARNING**
● Los humos fuera de la zona de respiración. ● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases.	● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio.	● No operar con panel abierto o guardas quitadas.	Spanish **AVISO DE PRECAUCION**
● Gardez la tête à l'écart des fumées. ● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail.	● Débranchez le courant avant l'entretien.	● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés.	French **ATTENTION**
● Vermeiden Sie das Einatmen von Schweibrauch! ● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes!	● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!)	● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen!	German **WARNUNG**
● Mantenha seu rosto da fumaça. ● Use ventilação e exhaustão para remover fumo da zona respiratória.	● Não opere com as tampas removidas. ● Desligue a corrente antes de fazer serviço. ● Não toque as partes elétricas nuas.	● Mantenha-se afastado das partes moventes. ● Não opere com os paineis abertos ou guardas removidas.	Portuguese **ATENÇÃO**
● ヒュームから頭を離すようにして下さい。 ● 換気や排煙に十分留意して下さい。	● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切って下さい。	● パネルやカバーを取り外したままで機械操作をしないで下さい。	Japanese **注意事項**
●頭部遠離煙霧。 ●在呼吸區使用通風或排風器除煙。	● 維修前切斷電源。	●儀表板打開或沒有安全罩時不準作業。	Chinese **警 告**
● 얼굴로부터 용접가스를 멀리하십시요. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시요.	● 보수전에 전원을 차단하십시요.	● 판넬이 열린 상태로 작동치 마십시요.	Korean **위 험**
● ابعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها.	● اقطع التيار الكهربائي قبل القيام بأية صيانة.	● لا تشغل هذا الجهاز اذا كانت الاغطية الحديدية الواقية ليست عليه.	Arabic **تحذير**

LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的説明以及應該使用的銀焊材料，並請遵守貴方的有関勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.

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